ELECTRONIC DEVICE CAPABLE OF PROVIDING A DISPLAY PANEL WITH PLANAR SUPPORT

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an electronic device, and more particularly, to an electronic device capable of providing a display panel with planar support.

2. Description of the Prior Art

A current electronic reading device often adopts a conventional LCD or a hard display panel. With development of flexible display panel technology (such as electronic-paper), a flexible display panel is applied for an electronic reading device. A related design can be referred to the Readius by Polymer Vision Inc., Ltd. and to Taiwan Patent No. M369468. As shown in FIG. **1** and FIG. **2** provided by Taiwan Patent No. M369468, a sectional folding mechanism is utilized to reduce a folded volume of the electronic reading device and solve the problem that an inner flexible display panel and an outer main body of the electronic reading device are not identical in length when they are expanded horizontally. However, when the flexible display panel is expanded horizontally, such kind of design will cause the flexible display panel can not be fully supported at a position where the sectional folding mechanism is disposed. Accordingly, the flexible display panel will damage due to a press stress at the said position.

Thus, how to design a folding mechanism which can provide a flexible display panel with a better planar support is an important issue in the structural design of an electronic device having the flexible display panel.

SUMMARY OF THE INVENTION

The present invention provides an electronic device capable of providing a display panel with planar support. The electronic device comprises a main body and a flexible display panel. The main body comprises a body portion and a cover portion. The connecting portion is pivotally connected to the main body portion, the cover portion is connected to the connecting portion so as to be capable of rotating relative to the body portion, and a containing space is formed by the cover portion, the body portion and the connecting portion. The flexible display panel is disposed in the containing space in a curved manner, and comprises a first display section and a second display section. The first display section is fixed to the cover portion, and the second display section is slidably disposed on the body portion.

These and other objectives of the present invention will no doubt become obvious to those of ordinary skill in the art after reading the following detailed description of the preferred embodiment that is illustrated in the various figures and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a sectional diagram of an electronic device according to a first embodiment of the present invention.

FIG. **2** is a sectional diagram of the electronic device in FIG. **1** when being in an expanded state.

FIG. **3** is a sectional diagram of an electronic device according to a second embodiment of the present invention.

FIG. **4** is a sectional diagram of the electronic device in FIG. **3** when being in an expanded state.

FIG. **5** is a sectional diagram of the electronic device according to a third embodiment of the present invention.

FIG. **6** is a sectional diagram of the electronic device in FIG. **5** when being an expanded state.

FIG. **7** is a sectional diagram of the electronic device according to a fourth embodiment of the present invention.

FIG. **8** is a sectional diagram of the electronic device in FIG. **7** when being in an expanded state.

FIG. **9** is a sectional diagram of an electronic device according to a fifth embodiment of the present invention.

FIG. **10** is a schematic diagram of the electronic device in FIG. **9** when being in an expanded state.

FIG. **11** is a partially sectional diagram of the electronic device in FIG. **9** viewed from its right side.

FIG. **12** is a partially internal diagram of a second display section being disposed on a body portion in FIG. **9**.

FIG. **13** is a sectional diagram of the electronic device in FIG. **9** when being in an expanded state.

FIG. **14** is a partially sectional diagram of the second display section being disposed on the body portion according to another embodiment of the present invention.

DETAILED DESCRIPTION

Please refer to FIG. **1**, which is a sectional diagram of an electronic device **10** according to a first embodiment of the present invention. The electronic device **10** includes a main body **12** and a flexible display panel **14**. The main body **12** includes a body portion **16**, a connecting portion **18** and a cover portion **20**. The connecting portion **18** is pivotally connected to the body portion **16** and the cover portion **20** respectively, so as to make the cover portion **20** capable of rotating relative to the body portion **16**. Thus, the electronic device **10** can not only be used as a planar electronic reading device but also be in a folded state for a user to take conveniently. When the electronic device **10** is in the folded state, the flexible display panel **14** is disposed inside a containing space **22** in a curved manner, wherein the containing space **22** is formed by the body portion **16**, the connecting portion **18** and the cover portion **20**. In this embodiment, the flexible display panel **14** is, but not limited to, an electronic-paper display device. The flexible display panel **14** can also be other common flexible display device, such as an OLED (Organic Light Emitting Diode) display panel and so on. The flexible display panel **14** includes a first display section **24** and a second display section **26**. In this embodiment, the first display section **24** is, but not limited to, fixed to the cover portion **20**, and the second display section **26** is slidably disposed on the body portion **16**. The electronic device **10** can also adopt a design that the second display section **26** is fixed to the body portion **16** and the first section display section **24** is slidably disposed on the cover portion **20**. Furthermore, related circuits and components of the electronic device **10**, such as a circuit board, a random access memory, a processor, a battery and so on, can be embedded in the body portion **16** or disposed inside another independent casing (not shown), and then connected to the body portion **16**. The related description will be omitted herein since it is commonly seen in the prior art.

As for the said design that the first display section **24** is fixed to the cover portion **20**, it can be achieved by electrical connection between the flexible display panel **14** and the main body **12**, such as electrical connection between a flexible printed circuit of the flexible display panel **14** and a control circuit board in the main body **12** to fix a relative position of the first display section **24** and the cover portion **20**. The method for fixing the flexible display panel **14** to the cover portion **20** is not limited to the said design. For example, the flexible display panel **14** can be attached to the cover portion